CHRONIC LESIONS OF THE LOWER LIP*

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Lesions of the epithelium of the lower lip may be divided into three groups: (1) congenital, (2) acute, (3) chronic. With the congenital lesions we are not concerned in this paper, unless they take on changes such as ulceration or sudden growth. Acute lesions do not cause concern, because they yield to medical treatment and are all cleared up in a few days. By chronic lesions is meant any lesion with a duration of one month or more. According to Bloodgood,[1] any lesion that is cronic is a cancer possibility; therefore, our discussion has to do with lesions that are cancerous or that have strong cancerous possibilities.

The mortality of carcinoma of the lower lip should be lower than the mortality of carcinoma anywhere else in the body, because early removal of the carcinomatous growth with a narrow margin of healthy tissue yields 100 per cent cures.[2] Any lesion on the lip is recognizable almost from its beginning, because of its position on an exposed portion of the body. Theoretically there should be no mortality in carcinoma of the lower lip, while in fact, many individuals die of this curable disease.

These facts are well known and a great deal has been written about early recognition and early operation. In spite of these contributions, valuable time is lost and cases progress to the hopeless stage through the employment of preliminary treatment with salves, X-rays, radium, and etc. Finally, after the lip has been operated, additional time is lost waiting for the metastatic glands to show sufficient size or hardness to satisfy the physician that they are metastatic. This delay and neglect in treating the lip lesion may be traceable in many cases to failure on the part of the patient to come early to the surgeon, or to many other causes over which the surgeon has no control. In the matter of the gland operation, the whole responsibility usually rests upon the surgeon and the only factor over which he has not control is the refusal of the patient to submit to operation.

The evidence that medical men are sometimes responsible for delay has led me to attempt an investigation of the reasons. There seem to be two main reasons, namely, a feeling that the neck operation is not necessary excepting in cases with clinically definite metastases, or with rather large or exceptionally hard glands beneath the chin; and a hesitancy towards subjecting the patient to a severe, extensive and mutilating operation with but little hope of a cure. It is the opinion of some physicians that many cases of carcinoma of the lip do not develop metastases. They are strengthened in their opinion by the statistics of Bloodgood (37%)[3] and Mayo (23.38%),[4] which show a very low percentage of secondary gland involvement. Furthermore, many of the reported operations for neck glands have been very extensive or very limited, and have yielded negative results, because the incomplete dissection only served to stir up the growth, or the condition was so advanced as to preclude any hope of cure, even with the most extensive surgery.

The great difficulty, therefore, is that there is no common understanding among us as to the proper indication for the neck dissection; and if we are not going to do routine gland dissection in every case of cancer of the lip, then it is imperative that we carefully study out and determine upon some definite criteria which will enable us to properly select cases suitable for a neck dissection.

Classification: Various classifications of chronic lesions of the lower lip have been given to us by students of this condition. The best known, those of Bloodgood and Mayo, are as follows:

Bloodgood[5]: 1. Benign. 2. Precancerous. 3. Malignant wart. 4. Cancer.

Mayo[6]: 1. Benign. 2. Precancerous. 3. Cancerous. 1. High degree of differentiation, 75 per cent. II. Moderate degree of differentiation, 50 per cent. III. Slight differentiation, 25 per cent. IV. No differentiation.

Bloodgood's classification, while based upon the pathological picture, is practically a clinical classification based upon the stage in which the disease is found. The reason for this unusual way of grouping is, that the type of treatment is determined by the stage in which the disease is found; that is, the stage of the disease determines the condition of the lymphatic glands that drain the area and, therefore, indicates the need or not of gland dissection. At one time, Bloodgood did a neck dissection in every case that showed any malignant change, but more recently he has pointed out that the malignant wart or very earliest cancerous change never has shown metastases, and consequently he has abandoned the neck dissection in the malignant wart.

These rules of treatment laid down by Bloodgood have never been questioned by those in a position to judge. Broders,[7] however, in reviewing the great mass of statistics of the Mayo Clinic, has come upon some interesting statistics in regard to cell differentiation; and with these figures he attempts to show that the prognosis depends somewhat upon the amount of differentiation. He has considered these findings in conjunction with the size of the lesion and the duration, and etc., but not from the standpoint of the stage of the disease which is, after all, the determining factor as far as liability to metastases is concerned. Moreover, his classification has been made on past statistics, and has not been used to determine the surgical procedure. It has seemed to us, therefore, that we cannot drop the study of the stage of the disease as our criterion for treatment, and if we are to use the differentiation of cells at all, it can be used to advantage, mainly, in the group of cases in which the stage of the disease is doubtful, that is, the very next stage beyond the malignant wart. To this end we have expanded our classification, which is based upon the stage

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of the disease to include cell differentiation, and with our limited statistics have endeavored to make a sort of preliminary report of our findings. Our ** classification is as follows:

1. Clinically benign.
2. Precancerous (clinically doubtful).
3. Cancerous (clinically doubtful or clinically cancerous).
   a, Malignant wart (very early).
   b. Fully developed, not infiltrating muscle.
      (1) High degree of differentiation.
      (2) Moderate degree of differentiation.
      (3) No differentiation.
   c. Fully developed, infiltrating muscle.
   d. Advanced (usually hopeless).

We have adopted the phenomenon of muscle infiltration arbitrarily, and not on the basis of any proof that muscle infiltration is significant, but because it does show us that the disease is no longer superficial, and perhaps the dissemination is more sure and more rapid, when the cancer cells are among the muscle bundles, where they are constantly massaged. We have not considered cell differentiation as a determining factor in treatment of tumors infiltrating muscle, because we believe that the fact of muscle infiltration is sufficient evidence of the degree of malignancy.

Diagnosis—Clinically benign lesions: To repeat, any lesion lacking the usual marks of malignancy, which has persisted for one month, in spite of palliative treatment should be considered as having malignant possibilities.[8] Among these lesions of more than one month duration, a large majority are proved to be benign, when examined under the microscope; clinically, however, they are not benign, because they are chronic. Without the aid of the microscope, therefore, the only lesions of the lower lip, which can be diagnosed clinically as benign, are the acute lesions.

Precancerous (Fig. I and II)—From the clinical standpoint, this group includes all lesions which have persisted for one month in spite of palliative treatment, and which have not developed or failed to show the usual clinical signs of malignant change. That is, a wart, a scab, or an ulcer, which does not show induration about the edges or base, or which does not show an irregular rodent border, cannot be properly classified clinically among the malignant conditions even though there is considerable glandular enlargement. (Fig. III) The term, therefore, is a clinical expression, but the diagnosis of precancerous lesions, that is, the proof that the lesions are benign, is entirely a matter of microscopic study.

Malignant wart (Fig. II)—This group includes lesions, all of which are chronic, and some of which show the clinical picture of malignant change, such as induration or deep ulceration, and which, under the microscope, shows the very earliest evidence of malignancy. That is, as Bloodgood points out,[9] there is a definite change at the tips of some of the papillary downgrowths from the normal relationship between the supporting connective tissue frame-work and the epithelial cells. The basal layer cannot be identified as such, and the large squamous or prickle type of cell is in direct contact with the supporting connective tissue.

Fully developed, not infiltrating muscle—In this group the clinical picture of chronicity and induration is practically always present, while the pathological picture shows all gradations from beginning infiltration of the underlying connective tissue to a fully developed, but quite restricted cancer. Here are included only those cancers where there is a demonstrable margin of connective tissue between the farthermost downgrowth of epithelial cells and the underlying muscle. The presence or absence of glandular swelling in the neck has no bearing on the diagnosis or the immediate treatment.

(Fully developed and infiltrating muscle) (Fig. III)—The lesions in this group are invariably diagnosed clinically as malignant. Pathologically, we include all fully developed cancers (excepting the recurrent or the very extensive cases), which show an infiltration of the tumor cells into the underlying muscle, or which show such a close relationship with the underlying muscle layer that there is no margin of connective tissue left between the tumor and the muscle. The neck glands in the submental or submaxillary regions may be palpable, but the presence of large clinically demonstrable metastatic glands would exclude the lesion from this group. The microscope may or may not show cancerous infiltration of the glands.

Very advanced—This group includes all cases that are clinically advanced, that is, lesions involving the whole of the lip, all cases of definitely clinically metastatic glands, all cases of recurrence.

Treatment: Clinically benign lesions, that is, ulcers, scabs, cracks, etc., which do not clear up readily, but which have not been present long enough to be classified as chronic, should be treated palliatively and not surgically.† Very soothing applications only should be used, because it has been repeatedly demonstrated that these lesions will heal more quickly and surely when protected and when kept covered with white vaseline, than when treated with irritants and cautery. Moreover, there is room for suspicion that irritants, such as silver nitrate, X-ray exposures, and caustics, oftimes lead to the development of cancer.[10] A very high percentage of cases of cancer of the lip give a previous history of caustics, usually silver nitrate, and many of the patients volunteer the statement that the change for the worse took place at the time of the beginning of the caustic treatment. Of all the soothing applications that we have, none seem to be so efficacious as plain white vaseline, copiously applied. If such lesions fail to heal by the end

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† We are inclined to look upon untreated lesions of one month's duration without induration or lacking other changes suggestive of malignancy as most likely benign, and frequently delay two to three weeks while the lesion is being treated with mild salves. If there is not a decided change for the better, surgery is resorted to without delay. Every lip case has a Wassermann blood test. If the test is positive, antiluetic treatment is started immediately. If there is not a practically complete disappearance of the lesion by the end of seven to ten days following administration of arsphenamine and mercury, the lesion is considered as not luetic, and surgery is employed.

of one month, then they belong in the precancerous group, and surgery is required.

Precancerous and malignant lesions, as has been pointed out before, are not distinguishable clinically, except where the malignancy is advanced. Thus cases which fail to meet the requirements for the clinically acute, fall into these groups and all require surgery, regardless of the clinical findings.

Taking into consideration first the doubtful or the very small fully developed carcinomata, our plan of procedure is as follows: A "V" as described by Bloodgood or a rectangular piece as advocated by the Mayo Clinic, is taken which includes the lesion, and at least half a centimeter of healthy tissue on all sides, the amount of margin depending upon the size of the lesions. If a "V" is taken, the point should extend well down onto the chin, because a blunt "V" has a tendency to leave a notched lip. The depth of the "V" should be considerably greater than the breadth (Fig. III). The cut edges are united by very fine silk sutures, taken well back from the margin and passing through the skin, muscle, and mucous membrane. These are tied loosely, but with sufficient tension to assure proximation of the cut muscle surface. As a rule, not over three of these deep sutures are required. In addition, the skin is very carefully approximated by means of a number of superficial, very fine silk sutures. No attempt is made to carefully approximate the mucous membrane edges, because the scars of the mucous membrane are not mutilating, because the additional suture material, especially in the mouth, adds to infection and, lastly, because the mucous membrane unites kindly and quickly without the careful approximation necessary in the skin. Tension is taken off from the sutures by means of a "butterfly" adhesive appliance. Upon examination of the microscopic sections and the discovery of a benign condition, the patient is told that his condition was not cancer, and that he is cured.

Fig. I.—Precancerous. Note extensive papillary downgrowth. Basal cell layer everywhere preserved. Round-celled reaction, mild. Compare with Figure II. (Path. No. 1946.)

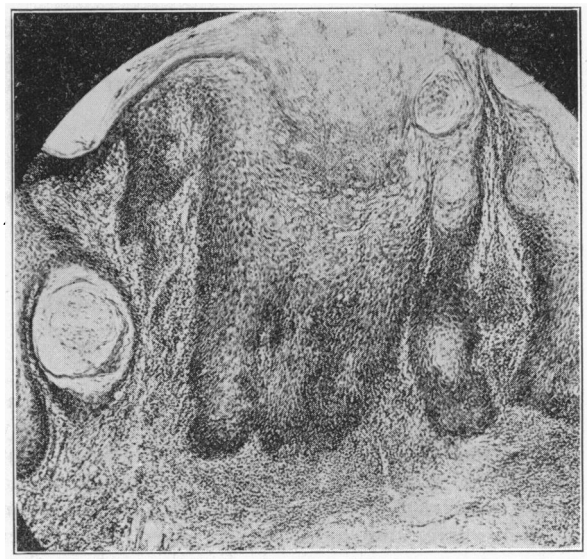

Fig. II.—Malignant wart. Note intense round celled reaction. Differs from Fig. I in that cells at tips of papillary downgrowths have lost their basal characteristics. (Path. No. 1946.)

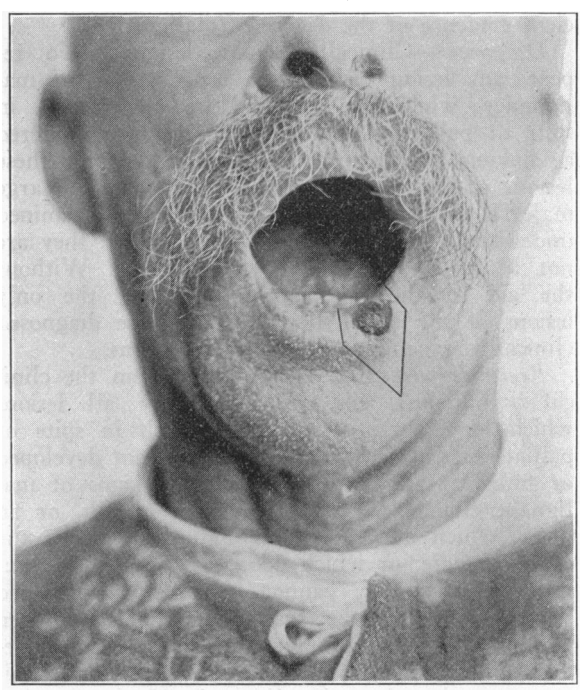

Fig. III.—Infiltrating muscle. Duration 3½ months. 50% differentiation (Broders' Group II). Practically no induration. Diagram showing margin given in "V" excision. Primary neck dissection showed no metastases.

Cancerous—1. *Malignant Wart:* The "V" is taken as in the preceding type, and upon examining the tissue under the microscope the patient is informed that he is cured. No gland dissection is done in this group even though there

are palpable glands beneath the chin. The gland dissection is omitted, because from statistical studies (Bloodgood's and our own), none of these cases have shown metastatic glands in the few instances where these glands have been removed and, as far as we can determine, none of these patients have afterwards developed carcinomatous glands.

2. *Fully developed, not infiltrating muscle*—Since most of these lesions are small, the most common type of local operation is the "V." In the examination of these specimens, the two important points for consideration are the relationship with the muscle layer and the degree of differentiation. If the muscle layer is not invaded and there is a high degree of differentiation, the patient is told that he is probably cured, but that he will have to be kept under close observation, and must report regularly at intervals of three months for at least a year and a half. If, at the time of operation, there are enlarge glands under the chin and they have not definitely disappeared by the time of the first visit (three months), the patient is advised to have the neck dissection done. If there is very little or no differentiation of cells in the new growth, the patient is advised to have immediate gland dissection, that is, within a week or two. Two cases out of four in this class had neck dissection immediately following the lip operation. A complete dissection of the submental triangle and one or both submaxillary triangles was done. Neither had the deep cervical chain disturbed, because none of the glands at operation gave any gross evidence of involvement; neither had microscopic cancer in the glands removed. The other two cases did not have neck dissection. One case showed no differentiation of cells; the other three showed 75 per cent differentiation. One showed enlargement, clinically, of the glands. This was the one without differentiation, and one of the two that had neck dissection.

Fully Developed, Infiltrating Muscle—Since practically every one of these cases is looked upon clinically as cancer, the patient is told that he will undoubtedly have to have a neck dissection, but that it is safe to wait until the pathological report is made. Within a few days or a week after the primary lip operation, all of these cases are now submitted to gland dissection, that is, the submental and one or both submaxillary triangles are dissected. This rule is being followed out regardless of differentiation.

In the past, twelve of our cases (40 per cent) had palpable glands beneath the jaw. Ten had primary neck dissection, but only one of these showed microscopic cancer in the glands. One of the two remaining cases came back a few months later with larger glands than at the first operation; a neck dissection was done and gross and microscopic cancer was found. This patient is living and well today, two years after the neck operation. The other case refused the neck dissection and died of pneumonia two and one-half years later, without further enlargement of the glands or other evidence of neck involvement.

According to Broders' classification, the ten with primary neck dissection were grouped as follows: Group I—Four cases; Group II—Two cases; Group III—Four cases; Group IV—No cases. One case in Group III that showed practically no differentiation is living, and without evidence of gland involvement two years since operation. Of the two without primary operation, the one with secondary neck dissection, because of gland metastases, belonged to Group III, and the one which refused the neck dissection belonged to Group II.

The neck dissection in all instances was a complete cleaning out in one block of the submental triangle with one or both submaxillary triangles.

The remaining sixteen cases out of twenty-eight in the group showing muscle infiltration, either had no palpable glands in the neck or no record was made of the glands. Two of the sixteen had primary neck dissection and no cancer was found, microscopically. One had a secondary dissection, because of gland enlargement and local recurrence. Fourteen did not have neck dissection. The two cases with primary dissection are well, and without recurrence nine months and one year, respectively. The one with secondary neck operation and secondary local excision has been lost. Of the thirteen cases without neck dissection, one is well one year since operation, two are well two years since operation, and one well four years since operation.

In this group of sixteen without palpable glands, the grouping according to Broders is as follows:

Group I—9 cases: Five cases heard from and well, from one to five and one-half years since operation; none of these had a primary neck operation.

Group II—3 cases: Two cases heard from and well; one without primary neck well, four and one-third years since operation; one with primary neck operation, well nine months since operation.

Group III—3 cases: One case heard from and well one year since operation. This case had primary neck operation; the other did not have primary neck operation.

Group IV—1 case§: This case did not have primary neck operation, and has been lost.

In other words a statistical study of this group showing muscle infiltration, reveals the following interesting facts. Of all cases, regardless of enlargement of glands, 3.5 per cent will show metastatic cancer in the glands removed at the primary neck operation. Of the cases in which palpable glands are found beneath the chin, 17 per cent will show metastatic cancer in the glands at the primary operation, or develop neck metastases later if the primary neck operation is omitted. Six per cent of the cases without enlarged glands beneath the chin will subsequently develop metastic glands if the primary neck dissection is not done. This means that a man with a cancer of the lip in which infiltration of muscle can be demonstrated, has nine chances out of ten of escaping further trouble if only the local operation is done. If he has enlarged glands, he has a little better than eight chances out of ten of

§ Personal communication from Broders places this case in Group III.

escaping without further trouble, if he has a primary neck operation; and five chances out of ten of escaping, if he does not have a primary neck operation. Our studies neither prove nor disprove Broders' contention, because his group, showing 75 per cent differentiation, gave us one case that showed cancer in the glands at the primary dissection. His group that shows 50 per cent differentiation gives us one case that developed metastic glands secondarily in spite of the fact that he did not have palpable glands at the time of the lip operation. His group showing 25 per cent differentiation, gives us one case that subsequently had to return for neck dissection, because of enlarging glands. This case showed metastatic cancer, and since the glands were enlarged at the time of the lip operation, metastatic cancer might have been discovered at that time had a primary dissection been done. His Group IV furnishes us with two cases. One case was lost and may have died of cancer,§ but the other case was well after two years.

When we contrast these findings with the relative infrequency of fully developed cancer that does not infiltrate muscle, and the absolute freedom from recurrence, and the absence of metastases at the primary operation in that group, we feel justified in concluding that the chances for an absolute cure by the local lip operation only, when the muscle is infiltrated, are altogether too uncertain, and that the neck operation should be done in every case.

Advanced: Since all of these cases show rather extensive lesions and many show glands beneath the jaw, which are either clinically doubtful or clinically quite definitely cancer, the local lip lesion is invariably removed in a rectangular piece, and a minor or extensive plastic is done to restore the lower lip. In most instances the neck dissection is done at the same time, but in the few cases a few days are allowed to elapse to give opportunity for the patient to react from the anesthetic and operation, and then the neck dissection is done without considering the pathological picture. The neck dissection is started by cleaning out the submaxillary and the submental triangles. If cancerous glands in the gross are encountered during the dissection, or the glands are clinically malignant, then the whole of the deep cervical chain on the side of the involvement is removed. Our cases in this group, number four. One case refused neck dissection and is well today, two and one half years after operation. One was not given neck dissection, reason unknown. Two had dissection of the superficial triangles only in face of the fact that there were clinically involved glands in the superficial triangles. One of these two had a thorough dissection of both submaxillary and the submental triangles. Both are dead. Both belonged to Broders' Group III. (Under this division we have not included any cases that came to us on account of recurrence.)

The Gland Operation: Epithelioma of the lower lip metastasizes to the superficial chains, that is, to the glands lying on the external surface of the floor of the mouth. Involvement of the glands of the deep cervical chain is accomplished only secondarily by infiltration through the superficial chains. In other words no primary metastases from carcinoma of the lip are below the level of the posterior belly of the diagastricus muscle.‡ If this be true then the removal of the primary glands calls for a complete cleaning out of all gland-bearing tissue within the submental and the submaxillary triangles. By gland-bearing tissue is meant every scrap of tissue including vessels, nerves, salivary glands, etc., between the platisma on the outside, and the muscles of the floor of the mouth below. The only structures that are preserved are the hypoglossal nerve, where it crosses the floor at the hyoid cornu, and the lingual nerve, where it enters the triangle at the extreme upper edge at the posterior border of the mylohyoid muscle.

In secondary gland involvement, the metastases, almost without exception, take place in the glands along the upper portion of the jugular vein, but sometimes may appear in the subparotid group first. Obviously, there is no indication for disturbance of the deep group unless there is strong evidence at operation of involvement of the superficial chains. In case, however, of proper indications the deep cervical dissection should be done in one block, that is, all the gland-bearing tissue of the side of the neck in the rectangle formed by the thyroid muscles medially, the jaw ramus superiorly, the trapezius posteriorly and the clavical inferiorly should be taken in one piece. The roof to this space is the platisma and the floor, the deep muscles of the neck. With this gland-bearing tissue should be included the sternomastoid and the omohyoid muscles, the posterior belly of the diagastricus, the internal and external jugular veins, the external carotid artery, the lower pole of the parotid gland, and all the nerves except the vagus, the phrenic, and the spinal accessory. Any procedure less complete than this is inadequate, and is as little likely to give results as the removal of a part of a lymphatic chain for metastatic involvement anywhere else in the body. The lowest gland,[11] as has been repeatedly pointed out, is below the level of the omohyoid, and the highest lies buried in the lower pole of the parotid. The jugular glands lie in the sheath of the vein, and in case of metastatic involvement the vein wall is very early invaded.

We have proof that there is an appreciable delay between the initial metastatic invasion of the deep cervical chain and the passage of the metastatic cells beyond the lowest gland of the deep cervical chain. Therefore, all hope is not lost, when it becomes necessary to do a deep cervical dissection. Our failures have not been so often from internal metastases, as from failure to do complete chain removal, and especially is this true in the neck.

Mutilation is a bug-bear. In the first place the consideration of such a possibility should never be entertained by the surgeon, and if he cannot

‡ Very few cases have been cited where an epithelioma at the angle of the mouth has apparently metastasized to the subparotid group.

submerge this factor he is unfit to treat surgically malignant disease. In the second place there need be no mutilation resulting from either the superficial or deep-neck dissection. From the unilateral dissection there may be a slight asymmetry, while in the bilateral there is only the scar, which should be a line.

Summary: 1. Many cases of carcinoma of the lip are lost through failure to do the gland operation or through delay in doing the gland operation.

2. Failure or delay in gland operation is due to lack of definite understanding as to which cases need a neck dissection and which do not.

3. Classification for practical purposes must be based upon the stage of the disease.

4. Diagnosis must be based upon pathological studies.

5. Treatment must be based upon definite knowledge of the stage of the disease, as determined by the pathological studies of the primary lesion.

6. Gland dissection must be carried out by triangles, and no partial dissection of the triangles should be done.

7. Gland dissection should be done in every case of fully developed carcinoma, with possible exception of a few highly differentiated tumors, which are sufficiently restricted in their local growth as to fail to show muscle infiltration.

8. The extent of the neck dissection must be sufficient to take in all involved chains, and in case of superficial triangle involvement must include the deep chains.

9. There is no resulting mutilation from neck dissection.

BIBLIOGRAPHY

I. J. C. Bloodgood—Carcinoma of the Lower Lip; Its Diagnosis and Treatment. Surg., Gyn. & Obst., April, 1914, pp. 410-415.
II. Ibid., p. 406.
III. Ibid., p. 418.
IV. A. C. Broders—Squamous Cell Carcinoma of the Lip. J. A. M. A., No. 10, Vol. 74, p. 656.
V. J. C. Bloodgood—See Bibl., No. I, p. 410.
VI. A. C. Broders—See Bibl., No. IV, p. 414.
VII. Ibid., p. 656.
VIII. J. C. Bloodgood—See Bibl., No. I, p. 415.
IX. Ibid., p. 414.
X. Ibid., p. 419.
XI. Keene's Surgery, Vol. VI, p. 411.

THE MOTAIS OPERATION FOR PTOSIS REPORT OF SIX OPERATIONS

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In my opinion this should always be the operation of choice where any power of upward rotation, no matter how small, of the globe is retained. Case 1 proves this.

There is no need before this section to go into detail as regards the technic of the operation. In this connection I wish to emphasize that this operation gives the closest possible approach to the normal associated action of the superior rectus and lid elevator.

The technic is covered so fully in Beard's Ophthalmic Surgery that it would be a waste of time for me to repeat it. In his summary on pages 247-250 he mentions having done the operation sixteen times and states, "The results in all of them are far and away the best I have ever obtained in this affection. The manner in which the free border of the lid keeps out of the way

Figure I (a)—Before operation. Note absence of corneal light reflex.

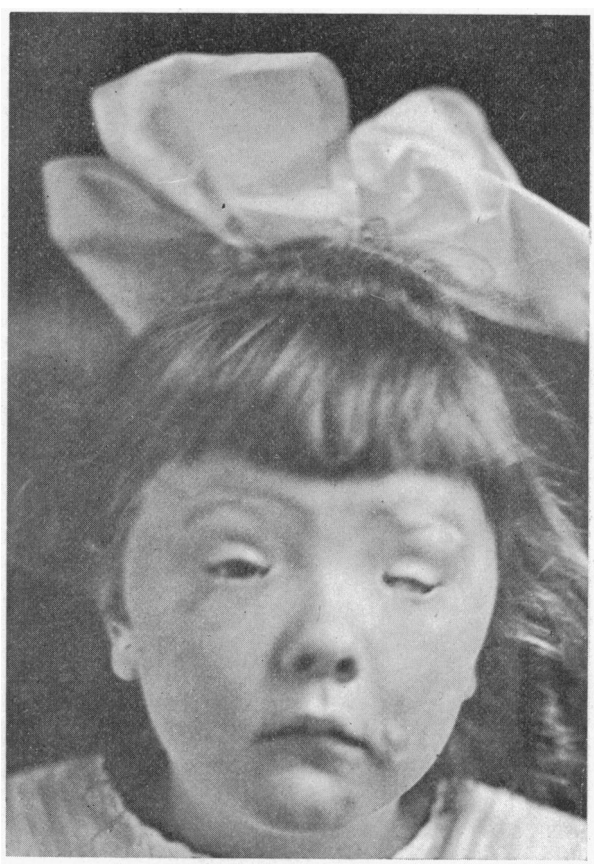

Figure II.—Right eye was same as left before operation.